KRISTAL BASE

Refrigerant recovery, recycling and recharging station for R1234yf vehicle A/C system.

User Manual

ORIGINAL MANUAL LANGUAGE: ITALIAN

Read this User Manual carefully and before operating the recharging station.

Revision number: 0 Manual code: 8326 Date: 03/10/2017

· Read this manual carefully for safe and correct operation.
· Read the "Safety Rules" on page 13 of this manual before operating this recharging station.
· Store this manual in a safe place.

IMPORTANT!

The information, illustrations and specifications contained in this manual are based on the most recent information available at the time of publication. The manufacturer reserves the right to make changes to the manual at any time without any obligation to notify people or organizations about these changes or revisions. The manufacturer, CTR s.r.l., shall not be liable for mistakes in the manual, accidental or resulting damage (including loss of profits) in relation to the supply, performances or use of t his material. Always operate cautiously and in compliance with the local regulations on health, safety and the environment. Additional information on safety and health and the product specifications relating to refrigerants, lubricants and motor vehicles should be asked for from their producers. No part of this manual may be reproduced or translated without the authorisation from CTR s.r.l. in writing.

CTR s.r.l. would like to thank you for selecting a product from our range and to encourage you to read these instructions. They contain any information required for correct operation of the recharging station you have purchased. Please read this manual entirely and follow the instructions provided in it thoroughly. This User Manual should be stored in a place where it is not subject to alterations. The information given in this manual may be changed without prior notice and/or without any additional obligation in order to add modifications and improvements to any shipped units. Reproduction or translation of any part of the manual is prohibited without the owner's authorisation in writing. CTR s.r.l. is responsible for manufacturing defects throughout the entire warranty term, which they will try to fix in the shortest time possible.

WARRANTY

The term of the warranty is 12 months from the purchase date. The warranty only entitles the user to the replacement of defective parts. The warranty is voided if equipment is not operated according to its intended use, if it is tampered with by unauthorised people or in cases where non-conforming components or procedures are used.

Warranty terms (please read)

1. Warranty details
CTR agrees to repair free-of-charge any defects that may be identified within the warranty term, which have occurred during normal use in compliance with the precautions laid down in this user manual.

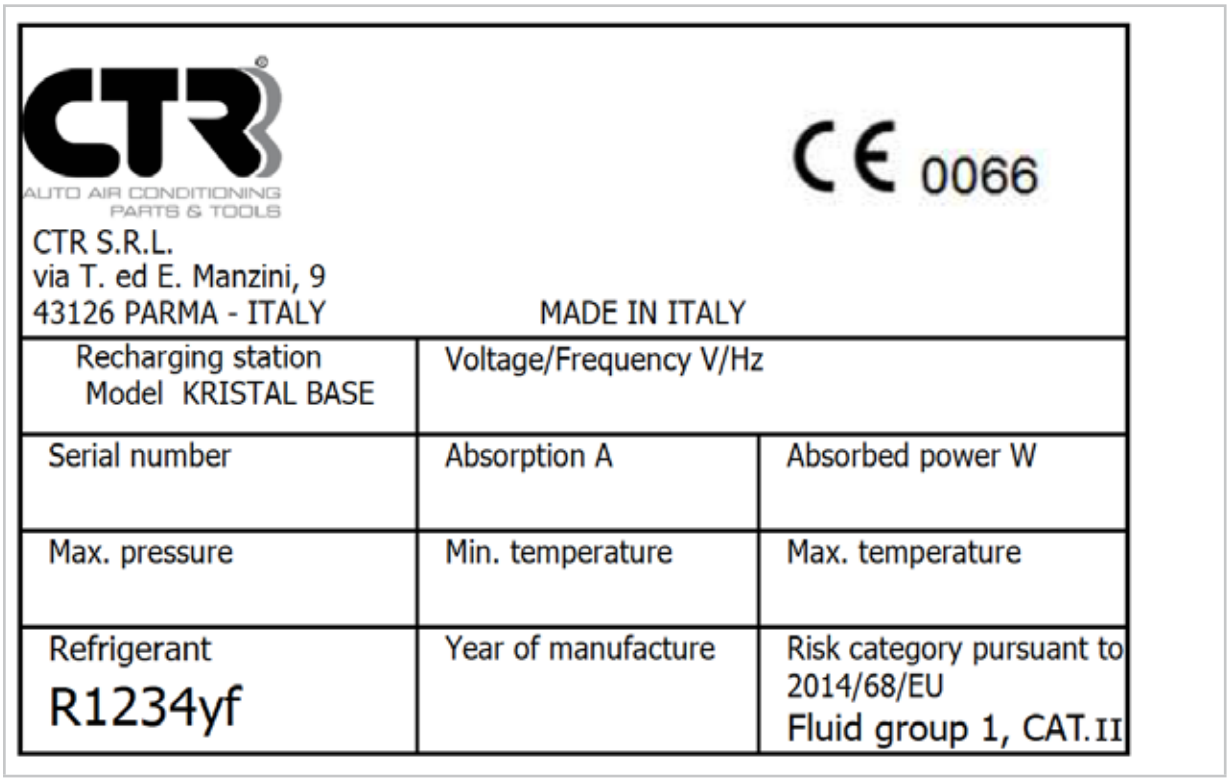
2. Procedure for repairs under warranty
To ask for repairs under warranty following a malfunction during the warranty term, contact the dealer from which the equipment was purchased and give him the purchase document. If this document is not submitted, repairs under warranty may not be granted.

3. Cases outside the warranty
Even if they are identified during the warranty term, the following defects are not included in
the warranty:
(I) defects due to equipment operation in special environments (e.g. potentially explosive environments);
(II) defects resulting from failure to comply with the danger, warning and caution signs and other indications provided in the user manual of the product in question;
(III) defects resulting from checks, handling, disassembly, etc. which have not been performed by our company or by an authorised service centre;
(IV) defects occurring with the purchased model. These include defects due to environmental factors relating to ageing (paint dissipation, etc.) or wear linked to equipment use;
(V) defects caused by pets/animals;
(VI) defects resulting from accidents such as fire, explosions, etc. lightning, earthquakes,
eruptions, flooding and tsunami, and other types of natural disasters or destruction due to riots, etc.;
(VII) defects originating from problems connected to the electricity supply;
(VIII) defects resulting from use of electricity other than that specified;
(IX) defects originating from use of different spare parts from those specified by CTR s.r.l.;
(X) defects due to events caused by malfunctioning of other products than this device;
(XI) defects due to electromagnetic disturbance.

4. CTR srl shall not be liable for the resulting costs.
(I) CTR srl shall be liable for additional costs connected to a product defect such as lost working hours, refrigerant leaks, refrigerant contamination and unauthorised shipment and/or labour costs.

ID LABEL

Model: KRISTAL BASE



This ID label is for information only. The ID label complete with data is affixed on the recharging station.

DECLARATION OF CONFORMITY

Machinery Directive 2006/42/EC

Electromagnetic Compatibility Directive 2014/30/EU

Low Voltage Directive 2014/35/EU

PED Directive 2014/68/EU concerning pressure equipment

The undersigned: CTR S.R.L. Via T. ed E. Manzini n° 9, 43126 Parma (Italy), as represented by our Legal Representative, hereby declare under our sole responsibility that the following product:

Recharging station

Model: KRISTAL BASE

is conforming with the requirements of Directives 2006/42/EC, 2014/30/EU, 2014/35/EU and with the related implementation provisions.
The following technical standards were also applied:

- EN 61000-6-3: 2007 + A1:2011 – Electromagnetic Compatibility (EMC). Part 6.3: General standards – Emission in residential, commercial and light industry environments.
- EN 61000-6-2:2006 – Electromagnetic Compatibility (EMC) Part 6-2: General standards – Immunity in industrial environments.

The pressure circuit is conforming with Directive 2014/68/EU and subsequent amendments and integrations, and it is classified as follows:
• category II - model KRISTAL BASE.

The max. allowable limits for correct operation of the KRISTAL BASE station are::
- max. working pressure: 20 bar
- max. working temperature: +50°C
- min. working temperature: +5°C

Also note that:
- the year of manufacture is shown on the ID label (inc. CE marking) affixed on the station;
- the technical manufacturing file is stored at our company by the legal representative.

This product has been certified by a notified body called ICEPI S.p.A.

EQUIPMENT COMPONENTS	
COMPONENT	**PED CLASSIFICATION / PROCEDURE FOR CONFORMITY ASSESSMENT**
Backup compressor	Art. 4, sect. 3
Tank	II (Form D1)
Solenoid valves	Art. 4, sect. 3
Piping and fittings	Art. 4, sect. 3
Safety valve	IV (Form B+D)

NOTIFIED BODY

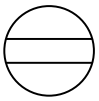
NAME AND ADDRESS:	ICEPI SPA - Via Paolo Belizzi 29,31,33 - 29122 Piacenza
ID NUMBER:	0066
CONFORMITY ASSESSMENT PROCEDURE:	Form A2
CE APPROVAL CERTIFICATE NO.	15CPED0234

PARMA 03/10/2017

Mr Aldo Adamo
(Managing Director)

SYMBOLS

Below is a short description of the symbols used in this manual.

	**DANGER** This symbol draws attention to situations or problems which may undermine the operators' safety as they result in accidents or the risk of death.
	**WARNING** This symbol draws attention to situations and problems connected to the machine efficiency which do not undermine the operators' safety.
	**PROHIBITION** The operations specified by this symbol should not be performed as they would jeopardise the level of machine efficiency.

IDENTIFICATION OF OPERATORS

Operators are classified by levels depending on their specific skills. So, it is important to keep in mind that, for the sake of individual safety and compliance with the existing regulations, each operator must only perform the tasks for which he is qualified. For easier identification of the operators' levels, we have used terminology in this user manual that specifies the min. qualification required to carry out the described operation.
Below are the operators' qualification levels to operate the machine.

MACHINE OPERATOR
This term identifies any operator qualified to operate the station in normal working conditions, using the on-board controls and with all the safety devices enabled.

SKILLED TECHNICIAN
This term identifies any member of staff who has been trained to work with the specified fluid and, generally, to carry out routine, preventative and non-preventative maintenance, including cleaning, fluid level inspections, adjustments, etc.

SERVICE TECHNICIAN
This term identifies any member of technical staff who has been trained and authorised by CTR S.r.l. to carry out maintenance and service operations.

1. INTRODUCTION

The recharging station illustrated in this user and maintenance manual is an automatic multifunctional system with digital setting functions and a database, designed for first installation air conditioning systems on vehicles to fulfil operations such as gas recovery, waste oil drain, vacuum creation, leak testing and gas recharge under the control of a microprocessor with electronic precision scales. The recharging station was designed for specific use with the refrigerant specified in the ID label, and it features electronic management functions to control the entire process by means of a microprocessor.

The table below shows the main components and their functions.

Components and their functions
Electronic scales #1 scale to weigh the amount of refrigerant gas in the gas bottle and to manage the RECOVERY and RECHARGE cycles with a 1g precision; #1 scale to weigh the amount of New Oil/UV Tracer with a 1g precision.
Refrigerant gas recovery compressor, 10cc.
Recovery filter (#1), anti-acid and dehydrating, high capacity filter, quick to replace.
Gas distillation unit at intake, featuring automatic and separate adjustment of the refrigerant and the oil flows coming from the A/C system, including the oil drain from the system.
Oil separator, installed immediately after the compressor featuring automatic return after the recovery cycle.
Gas bottle to recover the refrigerant gas, provided with a safety valve.
Vacuum pump capable of creating a high level of vacuum.
Dashboard featuring digital controls.
High contrast **multi language display** for use in environments with poor or excessive lighting.
Analog adjustable **pressure gauges**, 80mm, class 1.0, featuring pulse-free movement for A/C system
Hoses: # 2t high reliability LP and HP hoses, 2.5m in length, with quick coupling valves and manual opening function (screw-on).
Oil bottles: # 2, 250ml in capacity; #1 graduated bottle for waste oil and # 1 bellows bottle for New Oil/UV Tracer.

⚠	The recharging station is supplied with 2.5m long hoses for connection to the A/C system. If this hoses length is not enough for operational and functional purposes, 6m long hoses may be purchased from our sales outlet. The recharging station is supplied with a vessel for oil refill and a vessel for oil drain. If different types of oil are required during operation, various vessels should be purchased, one for each oil in use.
⚠	Under no circumstances should different types of oil be blended. Always check the types of oil to be used in the different A/C systems (they vary according to the compressor type fitted), which are identified in the product data sheets.

2. TECHNICAL SPECIFICATIONS

For easier understanding, technical specifications have been divided by model.

Name	Refrigerant recovery, recycling and recharging station
Model	KRISTAL BASE
Applicable refrigerant	R1234yf
Power voltage	220V / 240V
Power frequency	50Hz / 60Hz
Max. current absorption	5A
Max. power absorption	1000W
Max. working temperature	50°C
Min. working temperature	5°C
Max. pressure in pneumatic circuit	20Bar
Refrigerant bottle capacity	9,5 litres
Net weight	80Kg
Weight when fully loaded	91Kg
Footprint (height x width x depth)	1050mm x 530mm x 600mm
System recovery capacity	370 g/min
Vacuum pump capacity	70 l/min
Final vacuum	2mBar
High pressure (HP) outlet diameter (on vehicle)	17mm
Low pressure (LP) outlet diameter (on vehicle)	11mm

Please refer to the ID label on the recharging station for the mains power value.

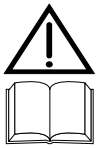
The value of the noise pressure measured is below 70dBA, so no special arrangements are envisaged for the operator, even in conditions of continual use.
Pursuant to the existing regulations on safety and health at work, the employer must, in any case, assess the level of workers' exposure to noise.

2.1 OPERATOR WORKSTATION

The recharging station is not provided with a real operator workstation as no constant operator supervision is not required: the operator is only expected to manage the controls and to monitor/check the station whenever an alarm triggers or a malfunction occurs.

3. SAFETY

3.1 SAFETY WARNINGS

	The recharging station must not be operated by staff who are not qualified or have not read, understood and learned the information contained in the manual with which the recharging station is supplied, and who have not received suitable training at courses organised by the manufacturer. We recommend that the recharging station be operated by mature and responsible adults. Special attention should be paid that the control device is not operated by children.
	When needed, our Service Dept. should be your only reference contact (especially for repairs or component replacement).
	The recharging station is fitted with an internal pressurised bottle. Be cautious!!! Adhere to the regulations in place in the country of use concerning final testing, periodic checking and the expiry date of the utilised bottle so that it can be used on a continuous basis over time. The refrigerant type for which the recharging station was designed is specified in the ID label. Always comply with the existing regulations on health and safety at work. Have safety data sheets at hand and always adhere to the instructions therein. Do not leave the machine unattended in the work place, even if it is operating in automatic mode. This user manual contains essential safety rules in order for the operator to use the recharging station correctly. Wear safety goggles and gloves.  DO NOT dump the refrigerant in the atmosphere and follow the instructions provided in section 4 "Disposal". Install the connection pipes (A/C system) and the feed pipes in such position that they DO NOT represent an obstacle or ARE NOT subject to damage.
	DO NOT use aggressive detergents to clean the recharging station. More specifically, it is strictly prohibited to use flammable fluids or detergents
	DO NOT place any object on the recharging station and do not use it as a support surface or to carry objects.
	DO NOT allow unskilled operators to carry out repair works as this may alter the level of safety of the recharging station.
	DO NOT unplug the high pressure (HP) and low pressure (LP) service hoses.

3.2 WARNINGS RELATING TO THE WORK PLACE

	We recommend that the recharging station be operated by mature and responsible adults. Special attention should be paid that the control device is not operated by children. DO NOT go close to the recharging station with naked flames or any other object which may cause overheating (resulting in the risk of fire). Do not operate the recharging station in rooms where a risk of explosion or fire exists. DO NOT smoke in the room where work processes are performed.
	We recommend using the recharging station in rooms with a proper level of lighting. DO NOT go close to the recharging station with naked flames or any other object which may cause overheating of the recharge circuit (resulting in the risk of fire). Work should always be carried out in a properly ventilated place. Perform work with and store the recharging station in a dry place, away from the elements (generally, not in harsh environmental conditions), and **do not use the station in rooms where there is a hazard of explosive or potentially explosive areas (ATEX)**
	Operate and store the recharging station in a dry place sheltered against the elements.

3.3 RECHARGING STATION UNINTENDED USE

Below is a list of **UNINTENDED USES** of the recharging station which may cause hazardous conditions:

⊖	use of the recharging station for other purposes than those for which it was designed and manufactured, as specified in the section "Scope"; use of the recharging station with a different bottle from the one in the standard supply; use of oils for the A/C systems other than those specified by the vehicle and/or A/C system manufacturer; use of different oil bottles from those in the standard supply.

In addition to the above, we recommend using the recharging station in rooms with a proper level of l ighting. Any other use that has not been specified in the section above is not allowed. Notably, it is prohibited:
– to allow recharging station operation by staff who are not qualified or have not read, understood and learned the information contained in the manual with which the recharging station is supplied, and who have not received suitable training at courses organised by the manufacturer. We recommend that the recharging station be operated by mature and responsible adults; special attention should be paid that the control device is not operated by children;
– to operate the recharging station if one or more than one safety device has been tampered with or disabled;
– to operate the recharging station in rooms where there is a risk of fire or explosion;
– to use other refrigerants than those specified in the ID label;
– to use the station to drain fluids and/or fill other liquids; to use other fluids than refrigerant gas R-1234yf. More specifically, it is prohibited to use flammable fluids;
– to place objects on the recharging station;
– to install the connection pipes (A/C system) and the feed pipes in such position that they represent an obstacle or are subject to damage;
– to use (pressure) vessels that are not suitable with the station in terms of material type and existing pressure level;
– to go close to the recharging station with naked flames or any other object which may cause overheating of the recharge circuit (resulting in the risk of fire); to operate the recharging station in rooms where a risk of explosion or fire exists;
– to smoke in the room where work processes are performed;
– to expose the station to rain and direct sunlight;
– to use flammable fluids or solvents for cleaning;
– to make unauthorised conversions and modifications to the recharging station;
– to operate the station when it is not in perfect operating conditions;
– to dump the refrigerant in the environment.

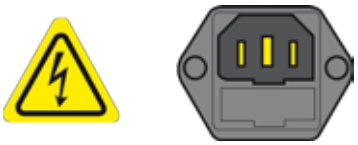
3.4 PRECAUTIONS FOR USE

Special care should be paid to possible refrigerant fluid ejections as:
- contact with the eyes may cause serious harm to sight;
- contact with the body skin (considering the very low boiling temperature) may cause burns.

If refrigerant gas is ejected and it contacts the operator's eyes or skin, the affected part should be rinsed with plenty of fresh water and medical staff should immediately be contacted.
The recharging station was designed for specific use with refrigerant gas R1234yf.

The type of refrigerant gas (R1234yf) for which the recharging station was designed is specified in the relevant ID label.

Warning!!! Live parts:

Power outlet	ON/OFF buttons
	

If the work cycle is disrupted for any reason whatsoever (e.g. no power supply), the operation should be restarted from the beginning.

The outer vessel used for the recharge should be type-approved for pressures of at least 35 bar and it is provided with a safety valve (it must be compliant with the requirements laid down in pressure vessel standards).

During operation check that the level in the oil vessels is correct: make sure that it is not too high because this may result in cycle disruption.
Do not fill these vessels with substances other than those specified.

3.5 PERSONAL PROTECTIVE EQUIPMENT

The table below lists the personal protective equipment that operators should be wearing for correct use of the recharging station. The first column shows the symbol affixed on the machine with a description of its meaning.

	Wear safety goggles. Contact with the eyes may cause serious injuries.
	Wear safety gloves: contact with the skin (considering the very low boiling temperature) may cause cold burns.

3.6 RECHARGING STATION SAFETY PRECAUTIONS AND PROTECTIONS

	The recharging station is intended for operation by one operator at a time. Other people, if any, are recommended to stay at a safe distance from the station both during work cycles and adjustment and maintenance.
	After the recharging station is switched on, wait at least five minutes before starting any operation.
	The inner tank in the recharging station containing the refrigerant gas MUST NEVER be filled 80% above its total capacity in order to prevent falls in performances.
	During operation check that the level in the oil bottles is correct: make sure that it is not too high as this may result in brisk falls in performance.

In the event of an EMERGENCY press the OFF button (see arrow) located in the front panel of the recharging station in order to cut off the power supply immediately.

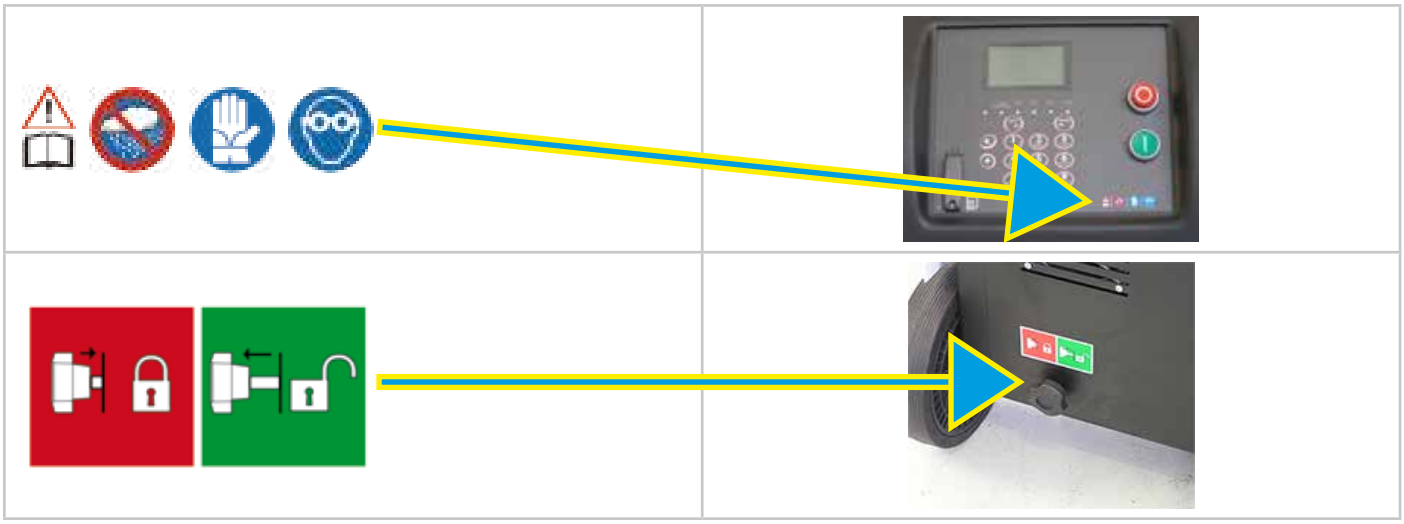
⚠	Always connect the high and low pressure piping (red and blue) to the supplied parts and do not use it for other purposes than those specified.
	During operation check the level in the waste oil bottle: the oil must not flow out.

3.7 RESIDUAL RISKS

	Fluid spillage due to breakage of pressure parts
⚠	Special care should be paid to possible refrigerant fluid ejections as: • contact with the eyes may cause serious harm to sight. • contact with the body skin (considering the very low boiling temperature) may cause burns.
⚠	If the refrigerant is ejected and comes into contact with the operator's eyes or skin, the affected part should be rinsed with plenty of fresh water and medical staff should be immediately contacted. Where this label is affixed, attention should be paid as it indicates the risk of electrocution. More specifically, **attention should be paid to live parts that are indicated by the lightning symbol on a yellow background.**

3.8 SAFETY WARNINGS - DECALS AND SYMBOLS

Below is a list of decals and symbols affixed on the recharging station with their position.
Please refer to the relevant section in this manual for the corresponding meaning.



Position	Decal	Description
Control panel		Safety goggles should be worn to protect the operator's safety and health in the event of a refrigerant leak.
		Safety gloves should be worn to protect the operator's safety and health in the event of a refrigerant leak.
		Refer to the vehicle manual for the type of refrigerant fluid before operating this re-charging station.
		Operate and store this recharging unit in a dry location, away from wind, rain or direct sunlight
Back		Inner tank block Blocked: block lever all the way in. Unblocked: block lever pulled.

3.9 POWER SUPPLY

Power must be supplied to the recharging station as instructed by CTR that is not responsible for the connection, in any case. The recharging station is only safe when the power supply system upstream the recharging station is compliant with the safety rules.
Having said this, for correct operation:

- connection to the line should be made using the plug provided in the recharging station an adaptor too may be added - after checking that the line voltage matches the voltage requirements specified in the ID label affixed on the recharging station.
- in the event of breakage contact our Service Dept. only.

⚠	If extensions are required, check that the cross-section of the cable is proportional to its length and the cable is installed in such position that it is not subject to any type of damage (do not place in transit area and in wet areas). If the station switches off following a power failure, wait a few seconds (normally approx. 10) before switching the station on again in order to allow for correct resetting of the electronic parts. Check that the point of connection to the electricity source provides for all protections and meets all the requirements specified in the existing provisions (earthing and residual current device).
⚠	If the power plug needs replacement, consult our Service Dept. and refrain from replacing it on your own unless authorised to do so in writing by our competent department. Failure to adhere to the above shall relieve CTR s.r.l. from claims for damage to property or harm to people caused by the power supply.

4. DISPOSAL

	Scrap the machine in compliance with the regulations existing in the country where it is used. In other words: 1. separate components according to their type (e.g. plastics, hazardous fluids, metal, etc.). Notably, WEEE (waste electrical and electronic equipment) must not be disposed of as urban waste, but must be collected separately; 2. the waste collection systems used, either public or private, must be those envisaged by the local legislation; 3. the station contains refrigerant fluids: improper use or incorrect disposal may have negative effects on human health and the environment, and it is sanctioned by law. Address specialised companies for these operations.

5. INSTRUCTIONS FOR USE

5.1 HANDLING AND TRANSPORT

Before moving the recharging station, check its level of stability and the support surface to ensure it is horizontal.
Check for bumps, holes or materials which may obstruct the path travelled by the recharging station.
Before moving the recharging station, check for residual packaging materials or movable materials on the station.

We recommend the following during recharging station handling and transport:

- lock the inner tank (see section titled "Inner tank locking and release");
- place all supplied accessories in such way that they are prevented from falling or getting damaged;
- move the station grabbing the supplied handles;
- move the station slowly and pay attention that it remains stable;
- keep at a suitable distance;
- pay special attention to your work place: avoid kerbs, steps or other obstacles.
- If the unit is not hauled carefully, the adjustments which have already been made may go out of calibration.
- Lift the recharging station with lifting equipment and place it on a pallet: lock the front wheels and secure them to the pallet using clamps.
- Drain the refrigerant from the recharging station completely.

The station can be pushed manually by the operator as its base is supplied with wheels and casters. Move the station on flat surfaces only.	When moving the station, the operator should check that all casters/ wheels are in contact with the ground and no part of the station is lifted.	To lift the station remotely, the operator should use lifting equipment with a suitable lifting capacity to the station weight (see technical specifications) and a pallet as support base.
		

5.2 INNER TANK BLOCKING AND RELEASE

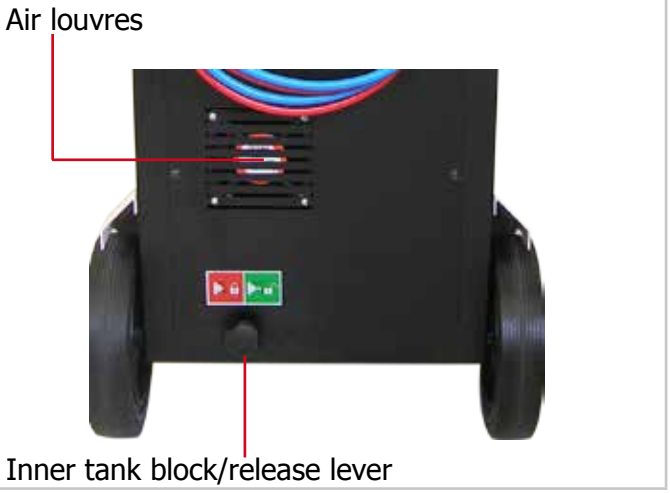
The inner tank block is one of the safety devices featured in the recharging station that is designed to protect the electronic scale against shocks during handling and/or transport operations. This precision mechanical system blocks the inner tank when the load is lifted from the scale.
If the mechanism is blocked, the electronics prevents all operations, and a message appears on the screen reading "Unblock internal tank". This message also appears whenever the block is engaged accidentally during station operation: it causes the ongoing operation to be immediately stopped.

1	Tank block engaged (for handling, transport and unloading) ☞ Push the lever to block the inner tank.	
2	Tank block disengaged (for operation) ☞ Pull the lever to unblock the inner tank.	

WARNING	• Do not turn the block lever. • Do not block the inner tank during operation of the recharging station, as this will cause all ongoing operations to be stopped

5.3 FRAME

Front and rear view

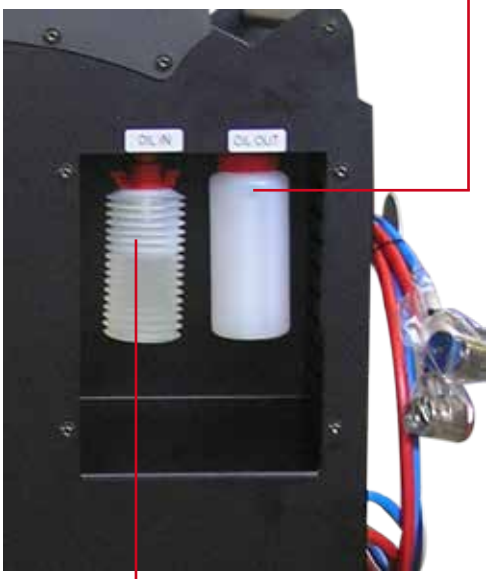


LH side view

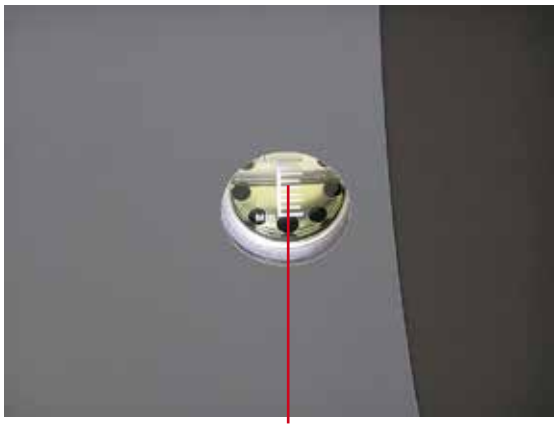
Printer (optional)

RH side view

Waste oil bottle

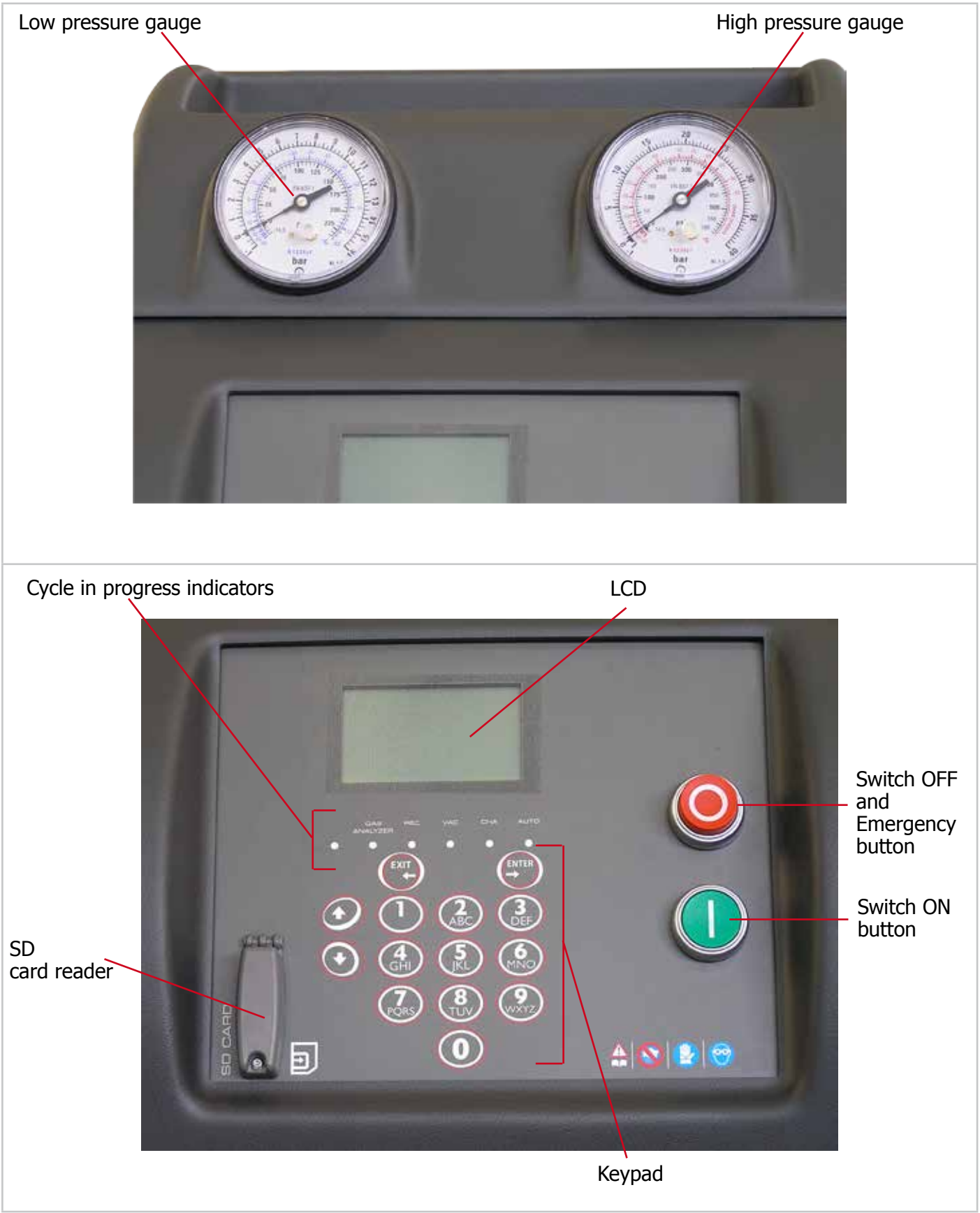


New Oil and UV Tracer bottle

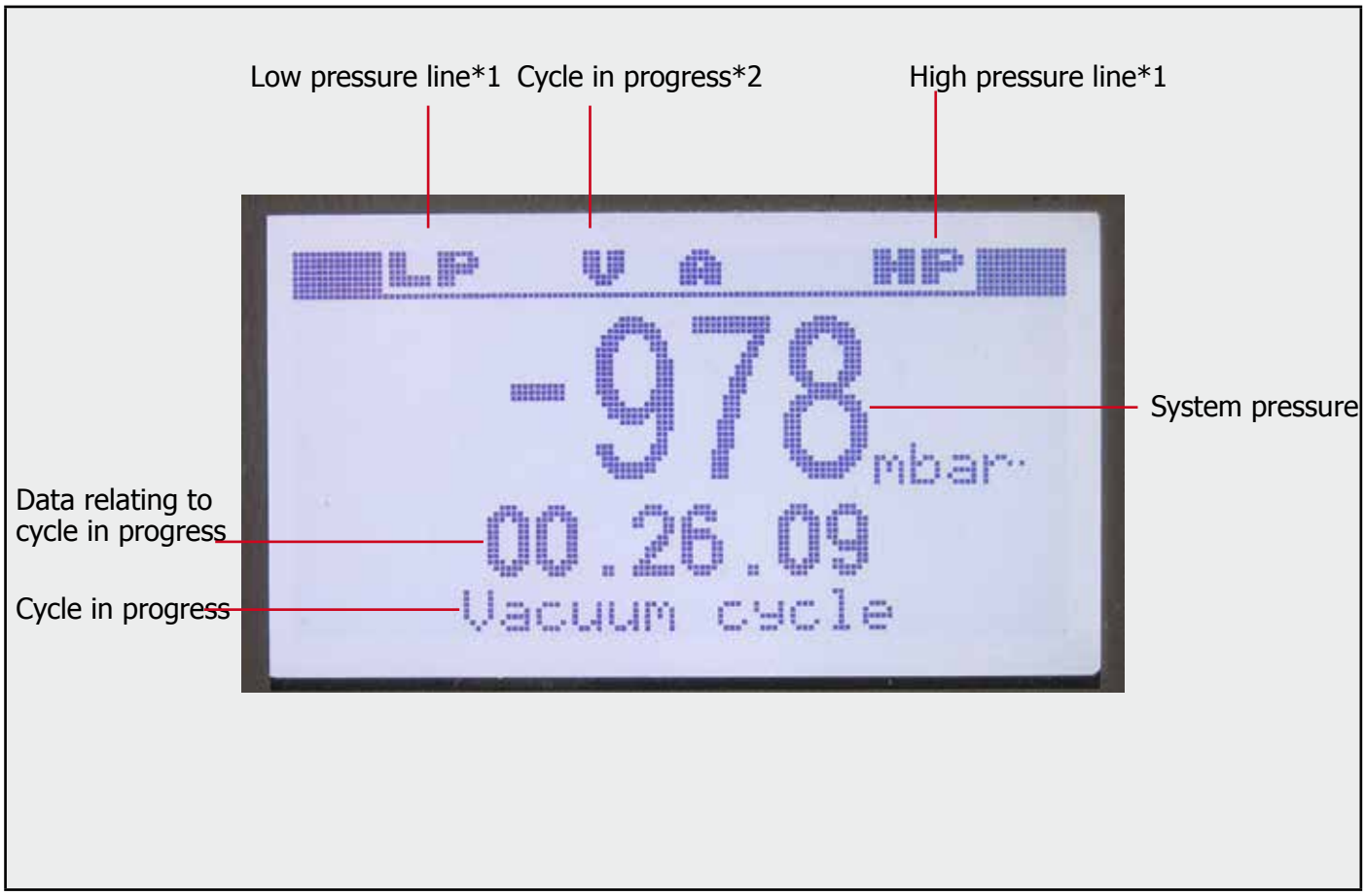


Sight glass for oil inspection in vacuum pump

Pressure gauges and control panel



LCD display



* 1 -"HP" and/or "LP" indicate that the corresponding line is open.

* 2 - The indicated cycles are:
"A" : Automatic;
"R" : Refrigerant recovery;
"V" : Vacuum;
"C" : Refrigerant filling;
"E" : Inner tank refill.

Example:
In the displayed case, the message "V A" informs the operator that the recharging station is running a vacuum cycle as part of automatic mode.

5.4 MAIN FUNCTIONS

The functions featured in the main menu of this recharging station are as follows:

- **Automatic operation:**
  This is the automatic cycle for refrigerant gas recovery, waste oil drain, gas recycling, vacuum creation, leak testing, refill of New Oil/UV Tracer and refrigerant gas.

- **Refrigerant recovery:**
  This cycle is designed for refrigerant gas recovery from the vehicle A/C system.
  During this cycle the recharging station recycles the refrigerant gas that has been recovered and can be reused after waste oil has been fully filtered and distilled.

- **A/C system vacuum:**
  This cycle is designed to remove air and humidity from the vehicle A/C system.
  At the end of the vacuum cycle time a leak test is performed.

- **Refrigerant charge:**
  This cycle is designed to charge the refrigerant gas, the New Oil/UV Tracer into the A/C system. Charging is completed automatically when the pre-set amounts are achieved.

- **Inner tank refill:**
  This cycle is designed to refill the inner refrigerant tank from an external tank. The recommended amount for good performances during the recharge cycle is 5kg.

- **Service hose discharge**
  This cycle is designed for the recovery of the residual refrigerant gas at the end of the pressure test in the vehicle A/C system.

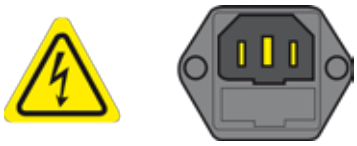
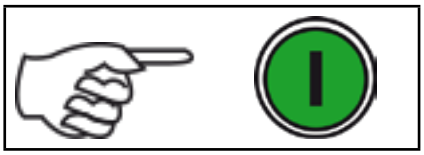
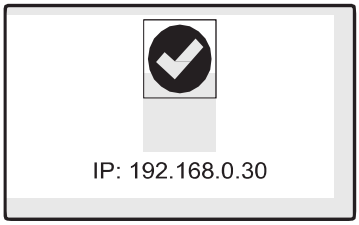
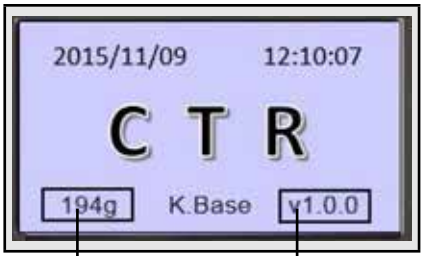
- **Service:**
  The Service menu is used to set various system parameters, to monitor data and to maintain/calibrate the recharging station.

6. FIRST USE

6.1 RELEASING THE INNER TANK

1	☞ Pull the lever to release the inner tank as shown in the figure. ☞ Switch the recharging station on.	
	WARNING When the inner tank is blocked, a message appears on the display: "Unblock internal tank". Switch the recharging station off, remove the inner tank block and switch the recharging station on again.	Unblock internal tank.

6.2 SWITCHING THE RECHARGING STATION ON

1	☞ Plug the female connector of the power cable into the outlet located at the back of the recharging station.	
	☞ Fit the plug in the power socket.	
2	☞ Switch on the recharging station. The IP address of the recharging station appears on the display. After viewing the IP address, the Home page is displayed. *The setup procedure of the IP address may vary according to the recharging station model.	 
3	☞ Press "Enter" in the "Waiting" screen to access the Main menu. *Refer to section 8.2.1 " Set date/time" on page 46 if you need to set up the date and time.	

Total amount of refrigerant including reserve in inner tank

Software version

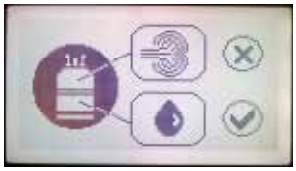
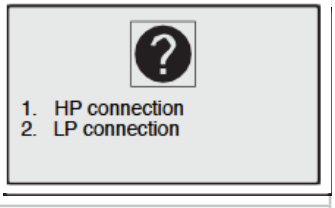
6.3 INNER TANK FILLING

For optimised operation of the recharging station we recommend filling the inner tank with 5kg of refrigerant gas (Min. 2Kg - Recommended amount: 5Kg - Max. approx. 7Kg).

WARNING	If the filled amount is inferior to 1kg, the refrigerant will not be transferred from the recharging station to the vehicle A/C system.

WARNING	The use of refrigerant in gaseous state causes the recharging station to be blocked completely. In this case, the display shows a message reading "Pressure too high". Contact our Service Department

Preliminary operations:

1	☞ Screw the High or Low pressure adapter to the fitting on the external tank. ☞ Connect the High or Low pressure service hose to the adapter plugged into the external tank.	
	Selection: Main Menu ⟶ "5. Tank refill"	
	<u>External two-valve tank:</u> open the valve marked with the "drop" symbol indicating the refrigerant outflow in liquid state. <u>External one-valve tank:</u> turn the external tank upside down after opening the valve marked with the "drop" symbol indicating the refrigerant outflow in liquid state.	
2	☞ Press "ENTER" to continue.	
3	☞ Select either HP or LP connection based on the service hose connected to the external gas bottle: 1: HP (high pressure) connection 2: LP (low pressure) connection	
4	☞ Fill the desired amount of refrigerant. g (weight) = xxxx -> desired filling amount yyyy -> max. amount available for recharge ☞ Press "ENTER" to continue.	
5	The tank refilling function starts if all the conditions above are met. **GasR**: amount of refrigerant transferred to inner tank (g)	LP and HP indicate the service hoses in use. 

6	As soon as the set amount of refrigerant gas is almost reached, the display shows the following message: ☞ Close the external tank. ☞ Press "ENTER" to recover the amount of refrigerant left in the service hose used. The display shows the message "End of recovery". ☞ Unplug the used service hose from the external tank as soon as filling is completed.	
7	☞ Switch the recharging station off or continue with the desired function.	

6.4 NEW OIL/UV TRACER LEVEL INSPECTION

Make sure that the New Oil/UV Tracer container is not empty.

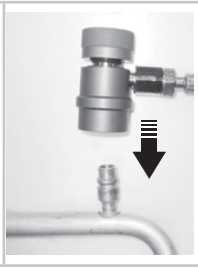
WARNING	Use of other types of New Oil/UV Tracer from those recommended by CTR s.r.l. is not allowed.

1	New Oil/UV Tracer and Waste oil bottles installation procedure: <u>New Oil/UV Tracer</u> ☞ Fit the oil bottle in the dedicated seat.	
	☞ Gently push the bottle upwards to fit it into its seat.	
		
	☞ Turn the bottle to the right to secure it to its seat.	
		

	Waste oil ☞ Screw the waste oil bottle clockwise to the stationary seat.
	 
2	New Oil/UV Tracer and Waste oil bottles removal procedure
	New Oil/UV Tracer ☞ Gently turn the bottle to the left to release it and remove it from its seat.
	 
	 
	Waste oil ☞ Unscrew the waste oil bottle anticlockwise from the stationary seat.
	 
	☞ Evacuate the waste oil bottle before moving on to the next steps.

7. OPERATING INSTRUCTIONS

7.1 SERVICE HOSES MANAGEMENT

1	How to CONNECT the service hoses: ☞ Pull up the lock ring and push the quick coupler on the service port corresponding to the A/C system. ☞ Open the valve of the quick coupler by turning it clockwise.	 
2	How to DISCONNECT the service hoses: ☞ Close the valve of the quick coupler by turning it anticlockwise. ☞ Pull up the lock ring and remove the quick coupler.	

7.2 DESCRIPTION OF MAIN MENU

The Main Menu displays the possible standard functions featured in this recharging station.

Selection from menu	Operating modes
1. Automatic 2. Recovery 3. Vacuum 4. Charging 5. Tank Refill 6. Hoses discharge 7. Service	List of standard functions available
1. Automatic	The recharging station automatically runs the cycles described in items 2, 3 and 4.
2. Recovery	Refrigerant gas is recovered from the vehicle A/C system. The refrigerant is then filtered, dried and separated, after which it is stored in the inner tank, while waste oil, if any, is transferred to the waste oil bottle.
3. Vacuum	First, the A/C system is inspected and vacuum is created for the time value that has been initially set by the user: the system automatically detects any leak.
4. Charging	Refrigerant gas is filled into the A/C system together with New Oil/UV Tracer. Recharge stops automatically as soon as the setup amount is achieved.
5. Tank refill	The inner tank is filled with the setup amount of refrigerant gas.
6. Hoses discharge	Service hoses are evacuated from residual refrigerant gas after each pressure test in the A/C system.
7. Service	Service menu designed for: sensor inspection gas filter replacement counters.

7.3 AUTOMATIC mode

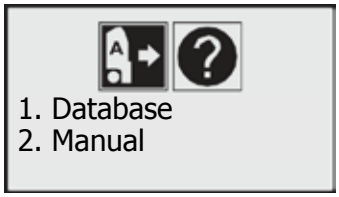
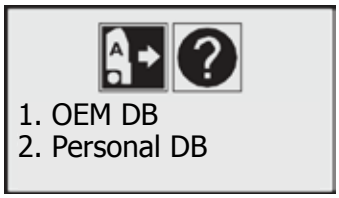
The recharging station runs the following cycles in automatic mode:

- recovery and recycling of refrigerant gas
- drainage of recovered waste oil, if any
- pressure checking
- vacuum and leak testing under vacuum conditions
- filling of New Oil/UV Tracer
- refrigerant gas refill

WARNING	If the amount of New Oil/UV Tracer in the corresponding bottle is low, the display shows the message "Oil insufficient"; the cycle may be started in any case by pressing the ENTER key, however, topping up of New Oil/UV Tracer shall not be allowed in this case. The cycle cannot continue if the display shows the following message: "Gas insufficient". In this case, the inner tank must be filled. Adhere to the instructions provided in section 6.3 "Inner tank filling" on page 26, where necessary.

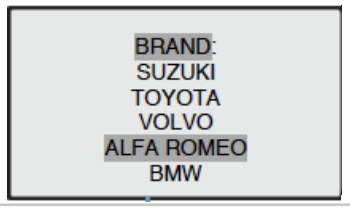
☞ Connect the Low and/or High pressure service hoses to the A/C system of the vehicle to be reconditioned and open the corresponding quick couplers.
Read the instructions given in section 7.1 "Service hoses management" on page 29 for additional details.
☞ Evacuate the waste oil bottle before moving on to the next steps.

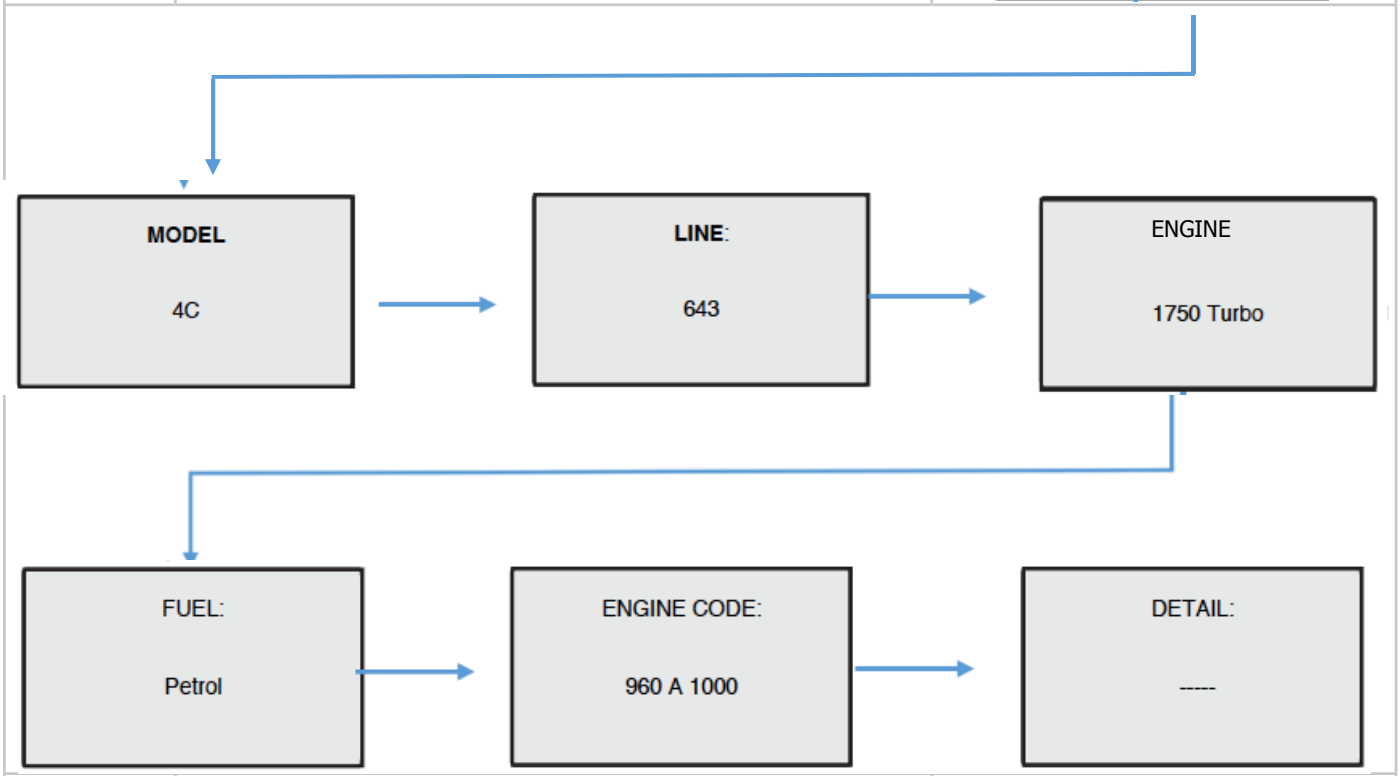
Selection:
Main Menu ⟶ "1. Automatic""

1	☞ Click "1. Database" to select the desired database type and follow the instructions in item 2. ☞ Click "2. Manual" to control the desired amounts in manual mode and follow the instructions in item 15.	
	Selection: Main Menu ⟶ "1. Automatic" ⟶ "1. Database"	
2	Select "1. OEM DB" to access the manufacturers database.	
3	Click "2. Personal DB" to access the customised vehicle database. *Follow the instructions given in item 10 on page 32 to create a customised vehicle database.	
	Selection: Main Menu ⟶ "1. Automatic" ⟶ "1. Database" ⟶ "1. DB OEM"	

4

☞ Select the vehicle brand from the available menus until you find and confirm the desired vehicle.

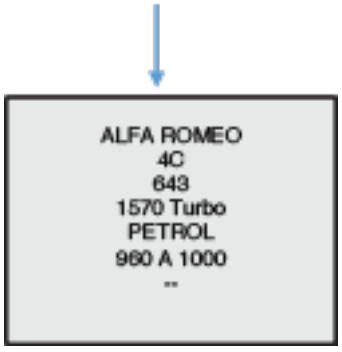




5

☞ At the end of the selection, the display shows all the selected parameters.

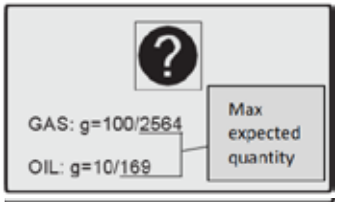
☞ Press "ENTER" to confirm and continue.

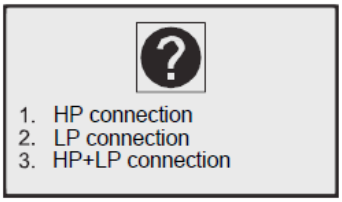
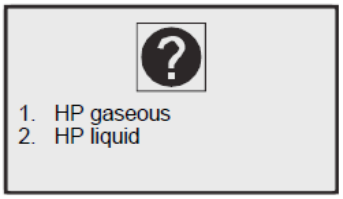
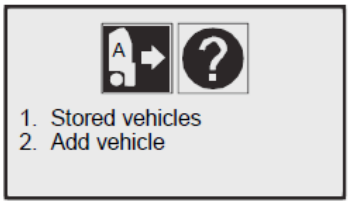


6

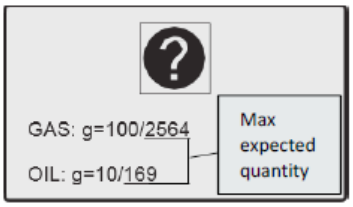
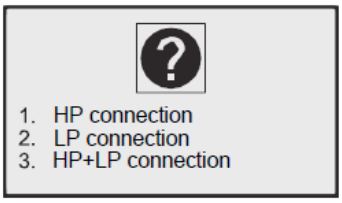
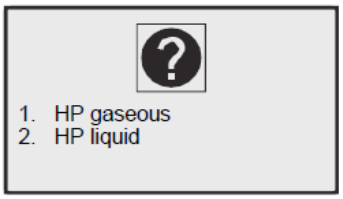
After confirmation, data may still be edited, where necessary.

☞ Press "ENTER" to confirm and continue.

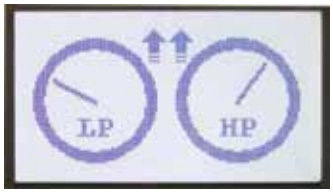
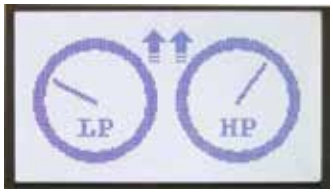


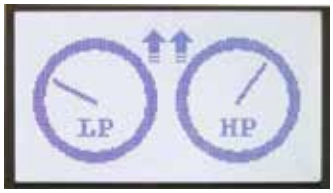
7	☞ Select either 1, 2 or 3 in the menu to set the connection type based on the A/C system configuration: 1 -> high pressure (HP) service hose only; 2 -> low pressure (LP) service hose only; 3 -> both HP and LP service hoses.	
	When the selection is "1. HP connection", a menu appears to select: 1. HP gaseous 2. HP liquid	
	☞ Select "1. HP gaseous" if the high pressure (HP) service port in the A/C system is located before the condenser. ☞ Select "2. HP liquid" if the high pressure (HP) service port in the A/C system is located after the condenser. Confirm the selected parameters and follow the instructions in item 17 on page 33.	
Selection: Main Menu ⟶ "1. Automatic" ⟶ "1. Database" ⟶ "2. DB personale"		
10	☞ Make the desired selection choosing from the given options: - "1. Stored vehicles" - "2. Add vehicle"	
11	☞ If option "1. Stored vehicles" is clicked: select a vehicle from the customised list and confirm the parameters as specified in item 4 on page 31 of the menu structure.	
12	If option "2. Add vehicle" is clicked: ☞ enter data relating to the vehicle that needs to be added following the instructions below: - Brand - Model - Line - Engine - Fuel: 1. Petrol 2. Diesel 3. Hybrid 4. Electric 5. Gas - Engine code - Detail - Gas quantity	
13	☞ Follow the instructions given in item 10 to select the vehicle from the list of stored customised vehicles.	

Selection: Main Menu ⟶ "1. Automatic" ⟶ "2. Manual"

14	☞ Set the desired amount of refrigerant gas and/or New Oil/UV Tracer.	
15	☞ Press "ENTER" to continue.	
16	☞ Select either 1, 2 or 3 from the menu to set the connection type based on the A/C system configuration: 1 -> high pressure (HP) service hose only; 2 -> low pressure (LP) service hose only; 3 -> both HP and LP service hoses.	
	When the selection is "1. HP connection": a menu appears to select: 1. HP gaseous 2. HP liquid	
	☞ Select "1. HP gaseous" if the high pressure (HP) service port in the A/C system is located before the condenser. ☞ Select "2. HP liquid" if the high pressure (HP) service port in the A/C system is located after the condenser. Confirm the selected parameters and follow the instructions in the next item.	
17	When the cycle is started, the recharging station runs a test of two pressures: the pressure in the A/C system and the internal pressure. The message below appears on the display for a few seconds: "Pressure test".	
	If there is no refrigerant gas in the vehicle A/C system to recover, the message "Empty system" appears and the recharging station automatically switches to the vacuum cycle.	

NOTE	
	• The vacuum cycle time is calculated automatically based on the system volume and the amount of refrigerant gas required for correct recharge • If the "ENTER" button is pressed during the vacuum and/or leak test cycles, the recharging station stops the ongoing cycle and moves on to the next one directly

18	At the end of the refrigerant charging cycle, proceed as instructed below to complete the optimal recharge according to the selections in items 7 or 16: **HP connection (high pressure service hose only)**	
	☞ Start the engine and switch on the A/C system in the vehicle ☞ Press "ENTER" to continue	
	The display shows the screen where the pressure test is enabled using the analogue HP pressure gauge. The recharging station waits for the operator to evaluate the working pressure (HP) in the A/C system for the necessary time. ☞ Press "ENTER" to continue and follow the instructions in item 19.	
	LP connection (low pressure service hose only)	
	☞ Start the engine and switch on the A/C system in the vehicle ☞ Press "ENTER" to continue.	
	The display shows the screen where the pressure test is enabled using the analogue LP pressure gauge. The recharging station waits for the operator to evaluate the working pressure (LP) in the A/C system for the necessary time. ☞ Press "ENTER" to continue;	
	☞ Close the quick low pressure coupler ☞ Press "ENTER" to continue;	
	The recharging station automatically evacuates the service hoses. ☞ Stop the engine and switch off the A/C system in the vehicle; ☞ Follow the instructions given in item 19	
	HP+LP connection (both service hoses)	
	☞ Start the engine and switch on the A/C system in the vehicle; ☞ Press "ENTER" to continue	

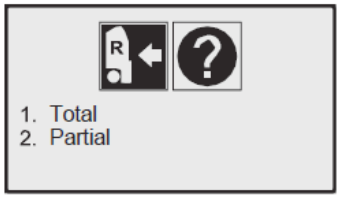
	The display shows the screen where the pressure test is enabled using the analogue LP pressure gauge. The recharging station waits for the operator to evaluate the working pressure (LP) in the A/C system for the necessary time. ☞ Press "ENTER" to continue.	
	☞ Close the quick high pressure coupler ☞ Press "ENTER" to continue.	
	☞ Close the quick low pressure coupler ☞ Press "ENTER" to continue;	
	The recharging station automatically evacuates the service hoses. ☞ Stop the engine and switch off the A/C system in the vehicle; ☞ Follow the instructions given in item 19	
19	As soon as the operations completed screen with the relevant report appears, ☞ press "ENTER" to continue..	
20	The display shows the printer screen: ☞ Press "ENTER" to print. After report printing is completed, the display offers the possibility to print the report once again. The report may be printed for as many times as required. ☞ Press "EXIT" to skip printing and go back to the Main menu. ☞ Disconnect the service hoses. ☞ Switch the recharging station off.	

7.4 Manual mode: RECOVERY

During this cycle the recharging station recovers refrigerant gas from the vehicle A/C system. The refrigerant is filtered, dried and separated from oil, after which it is stored in the inner tank while waste oil, if any, is transferred to the relevant bottle.

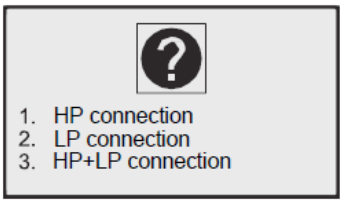
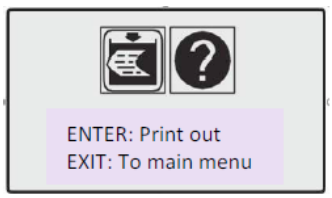
☞ Evacuate the waste oil bottle before moving on to the next steps.

There are two possible options for the recovery of refrigerant gas:

	☞ 1. Total recovery: refrigerant gas is recovered entirely from the vehicle A/C system. ☞ 2. Partial recovery: the desired amount of refrigerant gas only is recovered from the vehicle A/C system.	
	☞ Connect the Low and/or High pressure service hoses to the A/C system of the vehicle to be reconditioned and open the corresponding quick couplers. Read the instructions given in section 7.1 "Service hoses management" on page 29 for additional details.	

Total recovery of refrigerant gas

Selezione:
Main Menu ⟶ "2. Recovery ⟶ "1. Total Recovery"

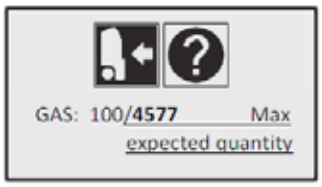
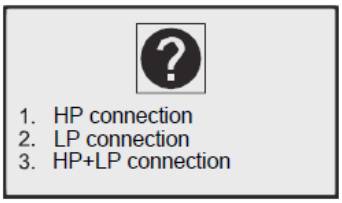
❶	Select either 1, 2 or 3 from the menu to set the connection type: based on the A/C system configuration: 1 -> high pressure (HP) service hose only 2 -> low pressure (LP) service hose only 3 -> both HP and LP service hoses.	
❷	If the necessary conditions are met, the recharging station starts the cycle for refrigerant gas recovery from the A/C system.	
❸	At the end of this cycle, the recovered oil, if any, is drained, and the final report relating to the performed cycle is displayed. ☞ Press "ENTER" to continue.	
❹	As soon as the printer screen appears: ☞ press "ENTER" to print. After report printing is completed, the display offers the possibility to print the report once again. The report may be printed for as many times as required. ☞ Press "EXIT" to skip printing and go back to the Main menu.	

5	At the end of the cycle: ☞ disconnect the service hoses used. ☞ remove the waste oil bottle and empty it. ☞ dispose of waste oil in compliance with the regulations concerning disposal of waste chemicals.

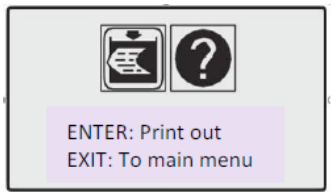
NOTE	• Press "EXIT" to instantly stop the ongoing cycle • If an error occurs, the user is warned about it by a message appearing on the display and the sounding of a buzzer. Press "EXIT": the display goes back to the Main menu. • In the event of an emergency press the Switch OFF button. • When the percentage usage of the refrigerant gas dryer filter exceeds the expected threshold, the following message is displayed: "Replace filter". Adhere to the instructions provided in section 9.1 "Gas dryer filter replacement" on page 57, where necessary. • When the pressure in the inner tank of the recharging station reaches the max. allowable limit, the user is warned about this event by a message "Pressure too high" appearing on the display and the sounding of a buzzer Switch the recharging station off and wait until the internal pressure value drops within the expected limits. If it does not, contact our Service Department.

Partial recovery of refrigerant gas

Selection:
Main Menu ⟶ "2. Recovery ⟶ "2. Partial Recovery"

1	☞ Fill the desired amount of refrigerant gas. for recovery. ☞ Press "ENTER" to continue.	
2	Select either 1, 2 or 3 from the menu to set the connection type based on the A/C system configuration: 1 -> high pressure (HP) service hose only; 2 -> low pressure (LP) service hose only; 3 -> both HP and LP service hoses.	

NOTE	• It is important to carry out partial recovery on the LP side (LP hose only is connected) in order to have a more precise amount of recovered refrigerant.

3	The refrigerant gas recovery starts as soon as the internal pressures have been tested.	
4	After the desired amount of refrigerant gas has been recovered, the cycle ends and the display shows the final report. ☞ Press "ENTER" to continue.	
5	As soon as the printer screen appears: ☞ Press "ENTER" to print. After report printing is completed, the display offers the possibility to print the report once again. The report may be printed for as many times as required. ☞ Press "EXIT" to skip printing and go back to the Main menu.	
6	At the end of this operation, ☞ disconnect the service hoses used.	

NOTE	• If only the low pressure (LP) line is used, the oil in the compressor is not recovered during this process. • Press "EXIT" to stop the cycle: the display goes back to the Main menu. • In the event of an emergency press the Switch OFF button. • As soon as the total amount of recovered refrigerant exceeds the max. expected threshold, the message "Replace filter" appears on screen. Adhere to the instructions provided in section 9.1 "Gas dryer filter replacement" on page 57, where necessary. • If an error occurs, the user is warned about it by an error message appearing on screen and the sounding of a buzzer. Press "EXIT": the display goes back to the Main men.

7.5 Manual mode: VACUUM

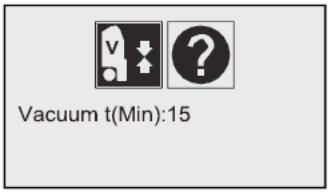
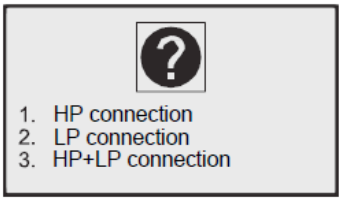
During this cycle the recharging station extracts humidity from the A/C system using a pump capable of achieving a high level of vacuum. Before this cycle is started, a check must be made that no refrigerant gas has been left in the A/C system. The vacuum time is set up depending on the size of the A/C system and as required.

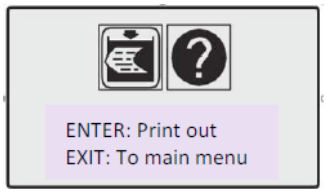
Before the vacuum cycle is started, the recharging station checks the initial conditions through the "Vacuum preparation" cycle. Based on the recorded conditions, it automatically runs the following steps. The recorded conditions may result in the combination of various cycles, i.e. the activation of the gas recovery cycle and waste oil drainage, sometimes simultaneously with the vacuum cycle. The purpose is to protect the vacuum pump.

At the end of this phase, the recharging station automatically runs a leak test in the A/C system for 5 minutes in order to check that it is tight.

☞ Connect the Low and/or High pressure service hoses to the A/C system of the vehicle requiring reconditioning and open the corresponding quick couplers. Read the instructions given in section 7.1 "Service hoses management" on page 29 for additional details.

Selection:
Main Menu ⟶ "3. Vacuum"

1	Set the desired vacuum time. ☞ Press "ENTER" to continue.	
	NOTE: We recommend that this cycle be run for a min. time of 30 minutes.	
2	Select either 1, 2 or 3 from the menu to set the connection type: based on the A/C system configuration: 1 -> high pressure (HP) service hose only 2 -> low pressure (LP) service hose only 3 -> both HP and LP service hoses.	
3	Before starting the vacuum time countdown, the recharging station checks that the min. vacuum level (-0.75 bar) can actually be achieved. If the station fails to achieve the specified min. vacuum level during this stage, the cycle should be discontinued as this is an indication of leaks in the A/C system.	
4	If, on the other hand, the min. vacuum level is achieved in the expected time, the vacuum cycle starts for the preset time.	

5	Once the pre-set vacuum time has elapsed, the recharging station runs a leak test in the A/C system that has been evacuated for a time of 5 minutes.	
6	At the end of the cycle the total time and the variation in pressure measured in the A/C system are displayed.	
7	As soon as the printer screen appears: ☞ press "ENTER" to print. After report printing is completed, the display offers the possibility to print the report once again. The report may be printed for as many times as required. ☞ Press "EXIT" to skip printing and go back to the Main menu.	

NOTE	• Press "EXIT" to instantly stop the ongoing cycle. • In the event of an emergency press the Switch OFF button. • When the hours of operation of the vacuum pump have reached the max. expected value, the display shows the following message: "Replace vac pump oil". Adhere to the instructions provided in section 9.2 "Vacuum pump oil replacement" on page 58, where necessary. • If an error occurs, the user is warned about it by a message appearing on the display and the sounding of a buzzer. • Press "EXIT": the display goes back to the Main menu.

7.6 Manual mode: CHARGING

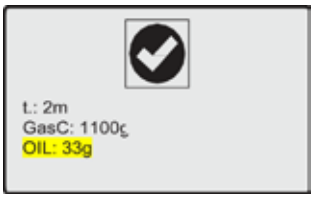
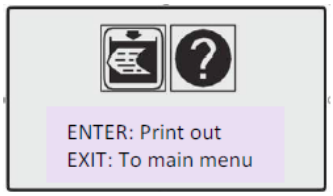
During this cycle the recharging station refills refrigerant gas, New Oil/UV Tracer into the vehicle A/C system. New Oil/UV Tracer should be filled before the refrigerant gas.
This cycle is completed automatically as soon as the initial amount set points are achieved.

WARNING	Do not start the charging cycle before refrigerant gas has been recovered and/or vacuum has been created in the A/C system!

WARNING	If the amount of New Oil/UV Tracer in the corresponding bottle is low, the display shows the message "Oil insufficient"; the cycle may be started in any case by pressing the ENTER key, however, topping up of New Oil/UV Tracer shall not be allowed in this case. The cycle cannot continue if the display shows the following message: "Gas insufficient". In this case, the inner tank must be filled. Adhere to the instructions provided in section 6.3 "Inner tank filling" on page 26, where necessary.

☞ Connect the Low and/or High pressure service hoses to the A/C system of the vehicle requiring reconditioning and open the corresponding quick couplers. Read the instructions given in section 7.1 "Service hoses management" on page 29 for additional details.

Selections:
Main Menu ⟶ "4. Charging""

1	Follow the instructions provided in section 7.3 "Automatic mode" on page 30. When data is confirmed, as specified in item 16 of the above-mentioned section, the recharging station automatically starts the selected cycle.	
2	After the desired amount of refrigerant gas and New Oil/UV Tracer has been filled, the cycle is completed and the display shows the final report. ☞ Press "ENTER" to continue..	
3	As soon as the printer screen appears: ☞ press "ENTER" to print. After report printing is completed, the display offers the possibility to print the report once again. The report may be printed for as many times as required. ☞ Press "EXIT" to skip printing and go back to the Main menu.	
4	At the end of this operation, ☞ disconnect the service hoses used.	

WARNING	At the end of the cycle the recharging station always checks for non-condensable gases in the inner tank. If such gases are identified, the recharging station starts a function to restore optimised conditions. The display shows the message "Air purge".

7.7 TANK REFILL

During this cycle the recharging station fills the inner tank in order to have the necessary amount of refrigerant gas for the recharge cycle and the necessary volume for the refrigerant gas recovery cycle.

Selection: Main Menu ⟶ "5. Tank refill"

1	Follow the instructions provided in section 6.3 "Inner tank filling" on page 26.

WARNING	The use of refrigerant in gaseous state causes the recharging station to be blocked completely. In this case, the display shows a message reading "Pressure too high". Contact our Service Department.

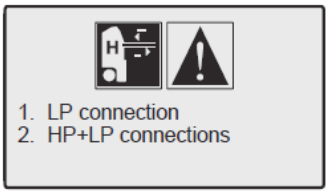
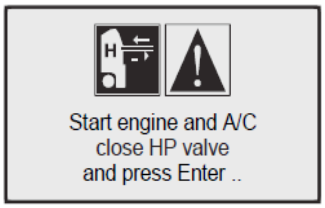
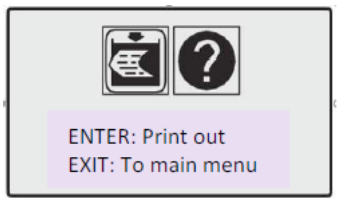
WARNING	This function may last up to approx. 40 minutes, and the counter associated to the gas dry filter does not count.

7.8 HOSES DISCHARGE

This function should be run at the end of each pressure testing in the A/C system as well. The recharging station automatically restores the amount of refrigerant gas in the HP and LP service hoses to the vehicle A/C system (gas previously used for pressure testing).

WARNING	If the service hoses have no refrigerant gas in them, the display shows an error message reading "Pressure too low" and an audible alarm triggers. The operation is consequently stopped.

Selection:
Main Menu ⟶ "6. Hoses discharge"

1	☞ Select the necessary connection to the service hose: 1 -> low pressure (LP) service hose only; 2 -> both HP and LP service hoses.	
2	☞ Close the quick coupler of the High pressure service hose. ☞ Start the engine and let it run at min. RPM, switch on the A/C system and set the following max. ventilation and min. temperature. ☞ Press "ENTER" to continue.	
3	☞ Wait until the values of the LP and HP pressures is the same. ☞ Close the LP quick coupler ☞ Stop the engine ☞ Press "ENTER" to continue	
4	Any refrigerant left in the hoses is recovered automatically.	
5	As soon as the operations completed screen appears, ☞ press "ENTER" to go back to the Main menu.	
6	As soon as the printer screen appears: ☞ press "ENTER" to print. After report printing is completed, the display offers the possibility to print the report once again. The report may be printed for as many times as required. ☞ Press "EXIT" to skip printing and go back to the Main menu.	

7.9 MANAGEMENT OF DATA IN SD CARD

The recharging station is supplied with an SD card where the following information is stored:

1. the results of all the cycles performed by the recharging station;
2. data pertaining to the Customised Database;
3. data pertaining to the legal name of the workshop (option).

The instructions in this section are addressed to skilled technicians and service technicians only.

If the recharging station is not provided with a printer (optional), the results of one or more than one run cycle can be printed using a printer connected to a computer. Data relating to the concerned cycles can, in fact, be viewed using a computer browser as the data format is "html".
The results of the selected cycle are displayed similarly to the example below:

Workshop data (information in the WSD.txt file stored in "docs" folder) Station logo (information in the logo.jpg file stored in "docs" folder) Run cycle date Cycle technical report	

8. SERVICE MENU

8.1 STRUCTURE OF SERVICE MENU

No.	Service menu	No.	Setup menu	Function		PAGE
1. Settings 2. Sensors values 3. Counters 4. Filter change				The Service menu is designed to edit the base setup parameters of the recharging station, to read the sensor and counter values, to reset the counters and to carry out periodic maintenance of the recharging station.		45
1	Settings	1.1	Set date/time	It is designed to set up the date and time.		46
		1.2	Customizing	1. Touch sensibility	It is designed to select the key response time.	47
				2. Working mode	It is designed to set the working mode.	47
				3. Select language	It is designed for language selection.	48
				4. Workshop data	It is designed to set data relating to the workshop legal name.	48
				5. Operators	It is designed to set the operators' names (max. 20).	50
				6. Operators PIN	It is designed to set the PIN codes of the operators.	50
				7. Printer	It is designed to enable and/or disable the print function.	50
		1.3	LAN config.	It is designed to edit the IP address of the recharging station, either automatically or manually.		51
		1.4	Import/Export	It is designed to import and export service data from the main electronic board to the SD card, and vice versa.		51
		1.5	Printer test	It is designed to run an operating test of the printer.		51
		1.6	Calibrations	It is designed to calibrate the sensors in the recharging station.		52
2	Sensors values	-		It is designed to show all the values read by the sensors.		52
3	Counters	3.1	Gas counters	It is designed to show the values of the partial counters and the totalizers, and to reset the partial counters.		53
		3.2	Oil counters			55
		3.3	Vacuum pump counters			55
		3.4	Compressor counters			55
		3.5	Filter counter			56
4	Filter change	-		It is designed to start the automatic procedure for periodic replacement of the refrigerant gas dryer filter.		56

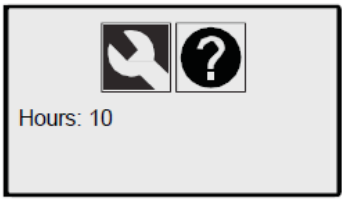
8.2 SETTINGS

The following basic setup parameters are edited in the Setting menu.

8.2.1 Set date/time

The default value is the central European time (UTC +1).
This function is for use by operators, skilled technicians and service technicians.

Selection:
Main Menu⟶ "7. Service ⟶ "1. Settings ⟶ "1. Set date/time"

1	When the "Year" screen appears: ☞ enter the year (yyyy). ☞ Press "ENTER" to confirm.	
2	When the "Month" screen appears ☞ enter the month (mm). ☞ Press "ENTER" to confirm.	
3	When the "Day" screen appears: ☞ enter the day (dd). ☞ Press "ENTER" to confirm.	
4	When the "Hours" screen appears ☞ enter the hour (24h). ☞ Press "ENTER" to confirm.	
5	When the "Minutes" screen appears: ☞ enter the minutes. ☞ Press "ENTER" to confirm.	
6	At the end of this operation, ☞ press "ENTER" to go back to the Settings menu.	

8.2.2 Customizing

8.2.2.1 TOUCH SENSIBILITY

The sensitivity of the keypad may be modified within a range of response values from 100ms to 600ms.
This function is for use by operators, skilled technicians and service technicians.

Selection:
Main Menu ⟶ "7. Service ⟶ "1. Settings ⟶ "2. Customizing ⟶ "1. Touch sensibility"

❶	☞ Select the desired sensitivity value from 1 to 6. ☞ Press "ENTER" to confirm the new value. The recharging station gets started automatically and uses the various desired settings.	Touch sensibility 1. 100ms 2. 200ms 3. 300ms 4. 400ms 5. 500ms 6. 600ms

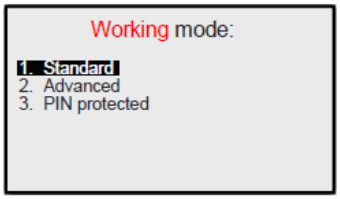
8.2.2.2 WORKING MODE

The operating mode of the recharging station can be selected among three different levels, depending on the work requirements.
The instructions in this section are addressed to skilled technicians and service technicians only

Selection:
Main Menu ⟶ "7. Service ⟶ "1. Settings ⟶ "2. Customizing ⟶ "2. Working mode"

❶	☞ Enter the PIN.	

NOTE	Refer to the Service manual for the procedure to enter the Master user PIN.

❷	Then select the desired operating mode choosing from one of the options below: • press 1 to select "Standard" mode; • press 2 to select "Advanced" mode; • press 3 to select "PIN protected" mode.	

STANDARD mode:
The recharging station records all refrigerant gas in and out movements to/from the station and it increases the general counters.

ADVANCED mode:
This mode is used to match all refrigerant gas in and out movements to/from the recharging station with the cycles performed by the various operators included in the list (max. 20 operators). In this case, the counters relating to the selected operator are increased.
On a yearly basis, the recharging station generates a ".csv" file which contains all data relating to gas in and out movements taken from the SD card.

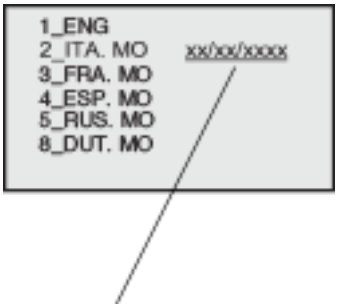
PIN PROTECTED mode:
This mode is used to match all refrigerant gas in and out movements to/from the recharging station with the cycles performed by the various operators included in the list (max. 20 operators). Whenever the recharging station is switched on, a PIN must be entered to log in.
In this case too, the counters relating to the selected operator are increased.
On a yearly basis, the recharging station generates a ".csv" file which contains all data relating to gas in and out movements taken from the SD card.

NOTE	The recharging station gets started automatically and uses the various desired settings.

8.2.2.3 SELECT LANGUAGE

This screen is used to edit and set the desired language.
This function is for use by operators, skilled technicians and service technicians.

Selection:
Main Menu ⟶ "7. Service ⟶ "1. Settings ⟶ "2. Customizing ⟶ "3. Select language"

❶	☞ Select the desired language among the available options and digit the number associated to each language; ☞ Press "ENTER" to confirm your selection. The recharging station gets started automatically before it shows the menu in the selected language.	 dd/mm/yyyy of language selection

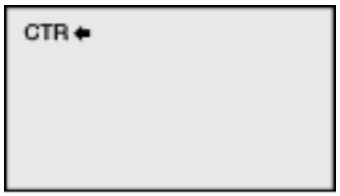
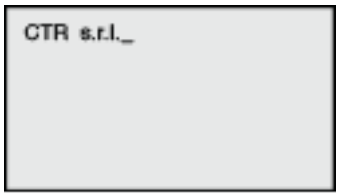
8.2.2.4 WORKSHOP DATA

This screen is used to edit data relating to the workshop legal name. This information is printed in all data print-outs. By default, workshop data is that of the recharging station manufacturer. This function is for use by operators, skilled technicians and service technicians

Selections:
Main Menu ⟶ "7. Service ⟶ "1. Settings ⟶ "2. Customizing ⟶"4. Workshop data"

❶	☞ Select "1. New" to set or edit Workshop data ☞ Select "2. View" to check the recorded data.	

Select "1. New" and enter the name of the company using the alphanumeric keypad.	
Example: · "C" is displayed when key "1" is pressed three times. · "T" is displayed when key "8" is pressed one time. · "R" is displayed when key "7" is pressed three times.	

2	☞ Enter the first digit: the cursor moves back to the right after a few seconds and the next digit can be keyed in.	
	☞ Press key "1" two times if you have entered the wrong character. The display shows the following symbol " ⇦ " for a few seconds and then moves back to delete the last entered character.	
	☞ Press key "0" two times to add a new space between two consecutive characters. ☞ Press key "0" three times to add a full stop between two consecutive characters. ☞ Press key "0" four times to add character "@".	

NOTE	A max. of 8 lines and 21 characters per line may be added.

3	☞ Press "ENTER" until the end of the available 8 lines to save the entered data. ☞ Press "EXIT" to go back without saving.	

8.2.2.5 OPERATORS

This screen is used to record operators who normally run the station in "Advanced" and "PIN Protected" modes. This function is for use by skilled technicians and service technicians.

Selection:
Main Menu ⟶ "7. Service ⟶ "1. Settings ⟶ "2. Customizing ⟶ "5. Operators pins"

1	☞ Enter the PIN.	

NOTE	Refer to the Service manual for the procedure to enter the Master user PIN.

8.2.2.6 OPERATORS PINS

This screen is used to record or edit the passwords of the operators who run the station in "PIN protected" mode. This function is for use by skilled technicians and service technicians.

Selection:
Main Menu ⟶ "7. Service ⟶ "1. Settings ⟶ "2. Customizing ⟶ "6. Operators pins"

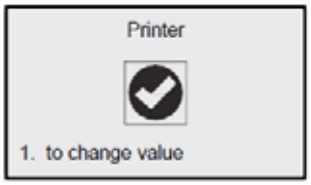
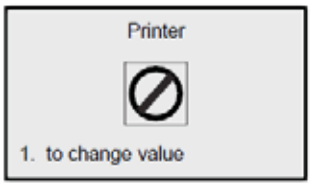
1	☞ Enter the PIN.	

NOTE	Refer to the Service manual for the procedure to enter the Master user PIN.

8.2.2.7 PRINTER

This screen is used to either enable or disable the print function at the end of each run cycle.
The instructions in this section are addressed to skilled technicians and service technicians only.

Selection:
Main Menu ⟶ "7. Service ⟶ "1. Settings ⟶ "2. Customizing ⟶ "7. Printer"

❶	To enable the print function, ☞ select "1. Edit the value and enable the print function". ☞ Press "ENTER" to confirm and go back the previous menu.	
❷	To disable the print function, ☞ Select "1. Edit the value and disable the print function". ☞ Press "ENTER" to confirm and go back the previous menu.	

NOTE	Printer should be installed before to enable this function.

8.2.3 LAN network configuration

This screen is used to set up the LAN connection to the user's network using a non-crossover network cable or a WIFI connection. Depending on the type of network, select either "Manual" or "DHCP" for the correct configuration. If the network and access rights allow so, technical service may be asked from the dealer remotely or from the Service Department. For further details, please contact your dealer or our Service Department. This function is for use by skilled technicians and service technicians.

Selection:
Main Menu ⟶ "7. Service ⟶ "1. Settings ⟶ "3. LAN Config."

8.2.4 Import / Export

This screen is used to import and export data from the SD card to the electronic board, and vice versa. This function is for use by skilled technicians and service technicians.

Selection:
Menu Principale ⟶ "7. Service ⟶ "1. Settings ⟶ "4. Import/Export"

8.2.5 Printer test

When this function is selected, the printer starts a test print cycle: the display shows the waiting symbol and different characters will be printed in the print report. This function is for use by operators, skilled technicians and service technicians.

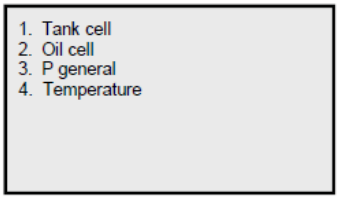
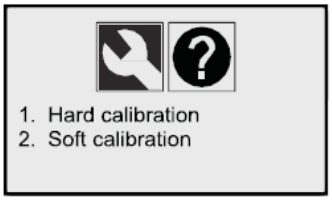
Selection:
Main Menu ⟶ "7. Service ⟶ "1. Settings ⟶ "5. Printer test"

At the end of the print test, the display shows the previous menu.
☞ Press "EXIT" to go back to the Service menu.

8.2.6 Calibrations

This screen is used to calibrate each sensor in two different ways:
· full calibration (Hard), by service technicians only;
· zero calibration (Soft), by skilled technicians and service technicians.

Selection:
Main Menu ⟶ "7. Service ⟶ "1. Settings ⟶ "6. Calibrations"

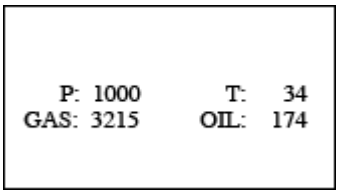
1	☞ To select the required calibration, digit the number associated to each sensor.	
2	The display shows the two available calibration modes. Contact our Service Department	

NOTE	Calibrations must be performed by skilled technicians and service technicians only. Contact our Service Department, when needed.

8.3 SENSORS VALUES

This screen is used to check the actual values measured by all sensors.
This function is for use by operators, skilled technicians and service technicians.

Selection:
Main Menu ⟶ "7. Service ⟶ "2. Sensor measurements"

1	The screen showing the measurements taken by each sensor is displayed as follows. P: internal pressure before HP and LP lines [bar] T: inner tank temperature [°C] GAS: amount of refrigerant in tank [g] OIL: amount of New Oil and UV Tracer in the corresponding bottle [g] ☞ Press "EXIT" to go back.	

NOTE	Press the key "ENTER" to view the measurements actually taken by the sensors, i.e. the ADC values.

8.4 COUNTERS

This screen is used to view the totalizers and the counters of each individual operator (if the recharging station is set for Advanced or Pin Protected mode) relating to:

- amount of refrigerant gas and oils moving in and out;
- total or partial hours of operation of both the vacuum pump and the recovery compressor;
- percentage usage of the gas dryer filter and the number of gas dryer filter replacements.

This function is for use by operators, skilled technicians and service technicians.

Menu selection:
Main menu ⟶ "7. Service ⟶ "3. Counters"

❶	☞ To select the desired counter, enter the corresponding number.	1. Gas counters 2. Oil counters 3. Vacuum pump counters 4. Compressor counters 5. Filter counter
	Select "1. Total counters" to monitor the amounts of refrigerant, the amounts of oil and the total hours of operation. Select "2. Operators counters" to monitor the counters relating to each specific operator (for Advanced and PIN Protected mode only).	❷ 1. Total counters 2. Operators counters

8.4.1 GAS counters

This screen is used to view the total and relative amounts of recovered And filled refrigerant gas in detail.	GasRV tot.: 0Kg GasRV rel.: 8Kg GasC tot.: 5Kg GasC rel.: 5Kg GasRB tot.: 12Kg GasRB rel.: 12Kg GasRT tot.: 13Kg GasRT rel.: 1Kg

GasRV tot.: total amount of refrigerant gas recovered from the vehicle A/C system (no resetting).
GasRV rel.: relative amount of refrigerant gas recovered from the vehicle A/C system since last reset (resetting possible).

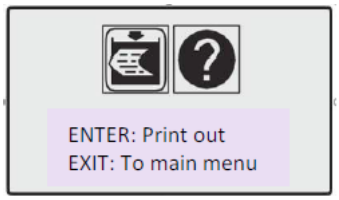
GasC tot.: total amount of refrigerant gas filled in the vehicle A/C system (no resetting).
GasC rel.: relative amount of refrigerant gas filled in the vehicle A/C system since last reset (resetting possible).

GasRB tot.: total amount of refrigerant gas recovered from inner tank (no resetting).
GasRB rel.: total amount of refrigerant gas recovered from inner tank since last reset (resetting possible).

GasRT tot.: total amount of refrigerant gas recovered: GasRV tot. + GasRB rel. (no resetting)
GasRT rel.: relative amount of refrigerant gas recovered since last reset: GasRV rel. + GasRB rel. (resetting possible).

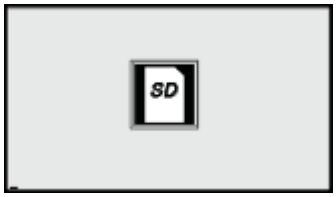
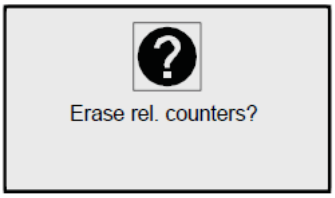
NOTE	After checking the counters, data may be printed or exported. Follow the procedure below to either print or export data.

☞ Press "EXIT" to go back to the Counters menu.
☞ Press "ENTER" to view the Print screen.

❶	☞ Press "ENTER" one more time to print the report of gas counters. Once printing is completed, the display offers the opportunity to print the previous report again. The report may be printed for as many times as required. ☞ Press "EXIT" to skip printing and go back to the next screen.	

☞ If the recharging station is set for Advanced or Pin Protected operating mode, proceed as specified in item 2.

☞ If the recharging station is set for Standard operating mode, proceed as specified in item 3.

❷	The display shows the Export data screen in the SD card. ☞ Press ENTER to copy data to the SD card. ☞ Press "EXIT" to move on to the next screen without exporting data.	
❸	The display shows the Reset screen of the relative counters. ☞ Press "ENTER" to confirm resetting of the relative counters. ☞ Press "EXIT" to skip resetting and go back to the Counters menu.	

8.4.2 OIL counters

This screen is used to view the total amounts of filled New Oil/UV Tracer in detail.

OilC: total amount of New Oil/UV Tracer filled, expressed in Kg (no resetting.

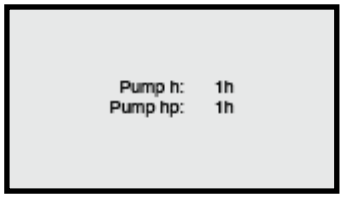
☞ Press "EXIT" to go back to the Counters menu.

8.4.3 VACUUM PUMP counters

This screen is used to view the hours of operation of the vacuum pump in detail.

Pump h: total hours of operation of the vacuum pump (no resetting).
Pump hp: hours of operation since last oil replacement.
Resetting is possible when the max. admissible threshold for oil replacement is reached.
Follow the instructions provided in item "3", section 8.4.1 "Gas counters" to reset the relevant counter and to delete the corresponding maintenance message.

☞ Press "EXIT" to go back to the Counters menu.



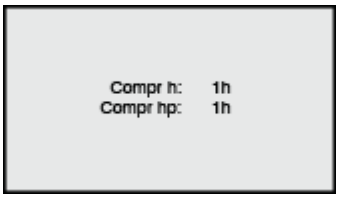
8.4.4 COMPRESSOR counters

This screen is used to view the hours of operation of the recovery compressor in detail.

Compr h: total hours of operation of the recovery compressor (no resetting).

Compr hp: hours of operation since last oil replacement (resetting possible - contact our Service Department)

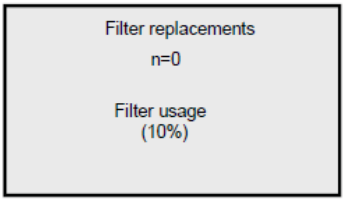
☞ Press "EXIT" to go back to the Counters menu.



8.4.5 FILTER counter

This screen is used to view the number of gas dryer filters replaced and the percentage usage of the installed gas dryer filter.

Filter replacements: specifies the number of times the gas dryer filter was replaced.



Filter usage: specifies the current percentage usage. As soon as the expected threshold for filter replacement is reached, this value is 100%. The value drops down to 0% after the filter has been replaced.

☞ Press "EXIT" to go back to the Counters menu.

8.5 FILTER CHANGE

This function is designed to start the replacement procedure of the gas dryer filter in conditions of max. safety for the staff involved in replacement operations.
The instructions in this section are addressed to skilled technicians and service technicians only.

Selection:
Main Menu ⟶ "7. Service ⟶ "4. Filter change"

Adhere to the instructions provided in section 9.1 "Gas dryer filter replacement" on page 57.

9. ROUTINE MAINTENANCE

The operations described below must be performed by skilled technicians and service technicians.

The recharging station requires that consumables be maintained and sensor calibrations be periodically inspected in order to keep it in safe and accurate operating conditions over time.
Below is the recommended schedule for maintenance and periodic calibrations.

- Gas dryer filter: whenever the max. admissible threshold is exceeded or once a year.
- Vacuum pump oil: whenever the max. hours of operation are achieved or once a year.
- Sensors: calibration inspection at least once a year (to be repeated if necessary).

9.1 GAS DRYER FILTER REPLACEMENT

When the counter of the gas dryer filter shows 95% usage, a message appears for a few seconds upon switch-on of the recharging station and at every restart to warn the operator that the filter needs replacement. The percentage wear rate too is displayed. As soon as the 100% limit threshold is achieved, the "Replace filter" message is displayed and the Automatic, Recovery and Tank refill functions are disabled until the existing filter has been replaced with a new one.

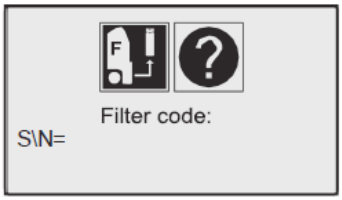
Genuine parts only should be used, as specified by CTR. In addition to a new gas dryer filter, filter replacement requires that a serial number be entered in order to start the relevant procedure. If the entered serial number is invalid, the procedure will not continue. Interchangeable gas dryer filters are not available on the market.

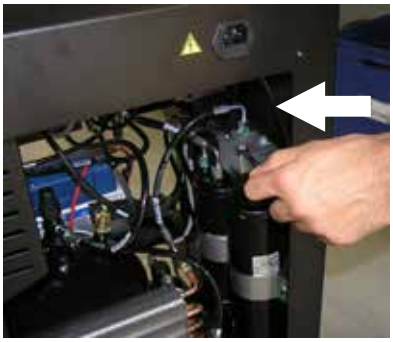
Replace the gas dryer filter any time the "Replace filter" message is displayed.
Failure to comply with the requirement above causes the warranty of the recharging station to be voided.
The instructions in this section are addressed to skilled technicians and service technicians only.

WARNING	• Replace the gas dryer filter timely to prevent inner tank contamination!! • Evacuate the waste oil bottle before starting the replacement procedure. • The total time required to replace the gas dryer filter is approx. 30 minutes. • Follow the given instructions thoroughly to replace the gas dryer filter.

Spare parts
- Gas dryer filter

Menu selection:
Main Menu ⟶ "7. Service ⟶ "4. Filter change"

1	Initially, the recharging station starts a safety procedure to discharge pressure from the gas dryer filter. Once this procedure is completed, the display shows the screen where the serial number of the new dryer filter needs to be entered.	
NOTE	The filter serial number is specified in the filter ID label.	
2	☞ enter the serial number of the new filter. ☞ Press "ENTER" to confirm the entered number and continue.	

3	☞ Undo the four screws shown in the figure and remove the back cover to access the gas dryer filter.	
4	☞ Undo the two locking screws and take out the waste gas dryer filter. ☞ Do not use the O-rings if they are worn.	

NOTE	DO NOT dump the gas dryer filter and the O-rings in the environment! This is chemical waste and must be disposed of in compliance with the local environmental regulations.

5	☞ Remove the protective film from the new gas dryer filter. ☞ Fit the new O-rings included in the supply and lubricate them Beforehand with oils intended for A/C systems.	
6	☞ Install the new gas dryer filter making sure that the new O-rings do not get damaged whilst turning the two screws. ☞ Fit the back cover. ☞ Press "ENTER" to continue.	

The recharging station automatically runs the internal vacuum cycle and the leak test, and finally resets the partial counter and the "Service required" message.
If malfunctions are identified, an error message is displayed and operation is stopped. In this case, the procedure must be repeated.
If the error persists, contact our Service Department.

9.2 VACUUM PUMP OIL REPLACEMENT

As soon as the limit threshold for the vacuum pump oil replacement is achieved, the display shows a message reading "Replace vac pump oil" with a view to ensuring max. vacuum pump efficiency and a long life cycle over time in normal operating conditions.
The instructions in this section are addressed to skilled technicians and service technicians only.

WARNING	• Genuine oil only must be used, as specified by CTR. • The use of any other oil from the one specified may cause irremediable damage. Failure to comply with this requirement causes the warranty to be voided. • The total time required for the vacuum pump oil replacement is approx. 15 minutes. • Follow the vacuum pump oil replacement instructions thoroughly.

Spare parts:
- Vacuum pump oil

1	☞ Switch the recharging station off, engage the gas bottle lock and disconnect the power cable. ☞ Remove the front cover in the recharging station by undoing the 10 fastening screws	
2	☞ Place a tray underneath the vacuum pump to collect waste oil.	
3	☞ Undo the drain plug carefully. ☞ Wait a few minutes before screwing the plug back in place and allow waste oil to be drained completely	

NOTE	• DO NOT dump waste oil in the environment! • Waste oil is chemical waste and must be disposed of in compliance with the-local environmental regulations.

4	☞ Unscrew the fill plug as shown in the figures alongside.	  
5	☞ Fill with fresh oil until the oil level rises to half the sight glass. ☞ Screw the oil fill plug correctly and with caution. ☞ Fit the front cover back in place.	
6	☞ Plug in the power cable, remove the gas bottle lock and switch on the recharging station. ☞ Follow the instructions provided in item "3", section 8.4.1 "Gas counters" to reset the relevant counter and to delete the corresponding maintenance message.	

9.3 OIL TOP-UP IN VACUUM PUMP

Follow the steps (1, 4 and 5) illustrated in the procedure in section 9.2 "Vacuum pump oil replacement" to top up the oil level.
The instructions in this section are addressed to skilled technicians and service technicians only.

9.4 REPLACEMENT OF PAPER ROLL IN PRINTER (optional)

These instructions are addressed to operators, skilled technicians and service technicians.

1	☞ Open the printer cover.	
2	☞ Fit the paper roll following the direction as shown in picture.	

WARNING	Failure to fit the paper roll in the correct direction is likely to cause paper jams.

3	☞ After fitting the paper roll, close the cover and tear off any excess paper.	

10. TROUBLESHOOTING

In the event of a malfunction the display shows the corresponding error messages according to the contemplated options.
Refer to the table below for troubleshooting operations, where necessary.
The error message disappears automatically as soon as the problem is resolved.
If the error persists, contact our Service Department.

Cycle	Error code	Message	Description
Vacuum	E300	Pressure too High	Refrigerant detected at the beginning of vacuum phase.
	E301	High pressure error	Refrigerant detected during vacuum cycle
	E302	Timeout	Max. vacuum time achieved - the cycle cannot be continued.
	E303	Leak test error	Leak detected during vacuum testing
Recovery	E200	Pressure too low	No refrigerant for recovery
	E201	Tank full	Full inner tank. Max gas quantity achieved
	E202	Timeout	Max. recovery time achieved
Vehicle recharge	E400	Gas insufficient	Very low gas level - fill the inner tank.
	E401	Oil insufficient	Very low oil/UV tracer dye level - fill the bottle.
	E403	Gas/Oil insufficient	Very low "Gas" and "New Oil/UV Tracer" levels. Fill the bottles.
	E407	Leak test error	Refrigerant leak detected during charging cycle
	E408	Depress. Oil/UV failed	Failure to fill "New Oil/UV Tracer" due to low vacuum level
	E409	Timeout Oil/UV charge	Max. time achieved for "New Oil/UV Tracer" refill
	E410	Timeout Gas charge	Max. refrigerant charge time achieved
Filter change	E810	Wrong serial number	Entered code invalid or already used
	E811	Leak test error	Max. filter replacement time achieved
	E812	Timeout	Leak detected during vacuum testing
Tank refill	E500	Pressure too low	No refrigerant for recovery
	E501	Tank full	Full inner tank. Max gas quantity achieved
	E502	Timeout	Max. recovery time achieved
Safety fan	E901	Fan 1 stopped	Mechanical or electric fault in fan 1
Safety pressure switch	E900	Pressure too High	Pressure inside tank exceeding 18 bar
System errors	E903	Unable to acquire	Failure to connect to the LAN network through DHCP
	E904	Unknown error	Error not implemented in the program routines
	E905	SD card read only mode	SD card in read only mode
	E906	SD card not present!	Failure to detect SD card/SD card missing
	E907	SD card access error!	Failure to read SD card

10.1 FUSE REPLACEMENT

These instructions are addressed to operators, skilled technicians and service technicians.

Fuse type: Glass, 250V, 8A T		
1	☞ Disconnect the power cable.	
2	☞ Take out the fuse holder, including the fuse. ☞ Remove the fuse. ☞ Fit a new fuse in the fuse holder. ☞ Press the fuse holder back in position.	
	☞ Plug the power cable in.	

11. SPARE PARTS

Order spare parts from the same dealer you have purchased your recharging station from.

Parts description	Parts picture	Parts picture
LP service hose		4018553
HP service hose		4018554
LP quick coupler		4018628
HP quick coupler		4018629
SD card with database		4018393
Gas dryer filter (#2 Orings and serial code)		4018867
Vacuum pump oil		6015034

Parts description	Parts picture	Parts picture
Printer paper roll		4018950
New Oil/UV Tracer bottle (1 box includes 6 bottles)		4018477
Waste oil bottle		4018952

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